

Crestron Green Light™

DIN-AP2

DIN Rail Control Processor

Operations & Installation Guide



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Crestron Green Light™ DIN Rail Control Processor: DIN-AP2

Introduction

The DIN-AP2 is a 2-Series control processor designed for small to medium-sized lighting and automation applications. DIN rail mounting enables modular installation alongside Crestron® DIN Rail lighting and automation control modules and other third-party DIN rail mountable devices.

Features and Functions

- 2-Series control engine
- MMC memory expansion card slot
- Cresnet port - master/slave selectable
- 10/100 Ethernet | SSL encryption
- e-Control®2, SNMP, & RoomView® support
- Two bidirectional RS-232 COM ports
- Four IR/serial ports
- Eight Versiport I/O ports
- Four low-voltage relay ports
- Configurable using D3 Pro™ or Crestron SystemBuilder™ software
- 9M wide DIN rail mounting
- Requires external power supply

2-Series Processor

Built upon Crestron's reliable 2-Series control engine, the DIN-AP2 is extensively programmable using Crestron's suite of powerful development software and vast database of drivers and software modules. The DIN-AP2 works seamlessly with Crestron's entire line of lighting dimmers and shade controls, keypads and touchpanels, thermostats, wireless gateways, and expansion modules.

DIN Rail Installation

The DIN-AP2 is designed to snap onto a standard DIN rail for installation in a wall mount enclosure or mounted on a wall panel. Wiring connections are made using detachable screw terminals positioned along the top and bottom, clearly accessible from the front for easy installation and servicing. All setup controls and connections are positioned on the center front panel. When installed in an enclosure utilizing 45 mm cutouts, the DIN-AP2's front panel stays accessible while all other connections are concealed.

System Integration

The DIN-AP2 provides for the integration of non-Crestron devices and subsystems through a host of control interfaces. Four isolated relays and eight Versiport I/O ports are built in to accommodate all kinds of sensors, contactors, door strikes, and other low-voltage controls. Two bidirectional RS-232 COM ports and four IR/serial ports allow for the integration of everything from simple shade controllers to advanced security systems. Additional interfaces and controllers can be added easily using Crestron's DIN Rail series lighting and automation modules.

Cresnet[®]

Cresnet is the communications backbone for Crestron lighting modules, wall box dimmers, shade controllers, thermostats, keypads, touchpanels, and many other devices. This flexible 4-wire bus streamlines the wiring of a complete Crestron system. The DIN-AP2 includes a pair of Cresnet master ports (paralleled) capable of supporting approximately 20 typical devices. Larger systems with more than 20 devices can be handled by adding the DIN-HUB Cresnet Distribution Hub. Connectivity for multiple homeruns can be facilitated using one or more DIN-BLOCK Cresnet Distribution Blocks. Additionally, at least one DIN-PWS50

Cresnet Power Supply is required to power the DIN-AP2 and any connected Cresnet devices.

Ethernet and e-Control[®]2

Built-in 10/100 Ethernet facilitates secure high-speed network connectivity, enabling extensive capabilities for remote system maintenance and control, and providing an interface to other Crestron control systems. Native features include a built-in email client to report system troubles and other functions to the owner or service company via instant e-mail notification. An onboard Web server provides the foundation for Crestron's exclusive e-Control2 Xpanel technology, providing secure IP-based remote control.

RoomView[®] and SNMP

For large facilities utilizing multiple DIN-AP2's and other control systems, Crestron's exclusive RoomView Help Desk software delivers a comprehensive solution for remote monitoring and asset management. Also, built-in SNMP support enables similar capability using third-party network management software, allowing full control and monitoring from the IT Help Desk or NOC in a format that is familiar to IT personnel.

Memory Expansion

A memory card slot allows for easy expansion of the DIN-AP2's internal memory using a MMC (Multimedia Memory Cards)-compatible memory card up to 2 GB.

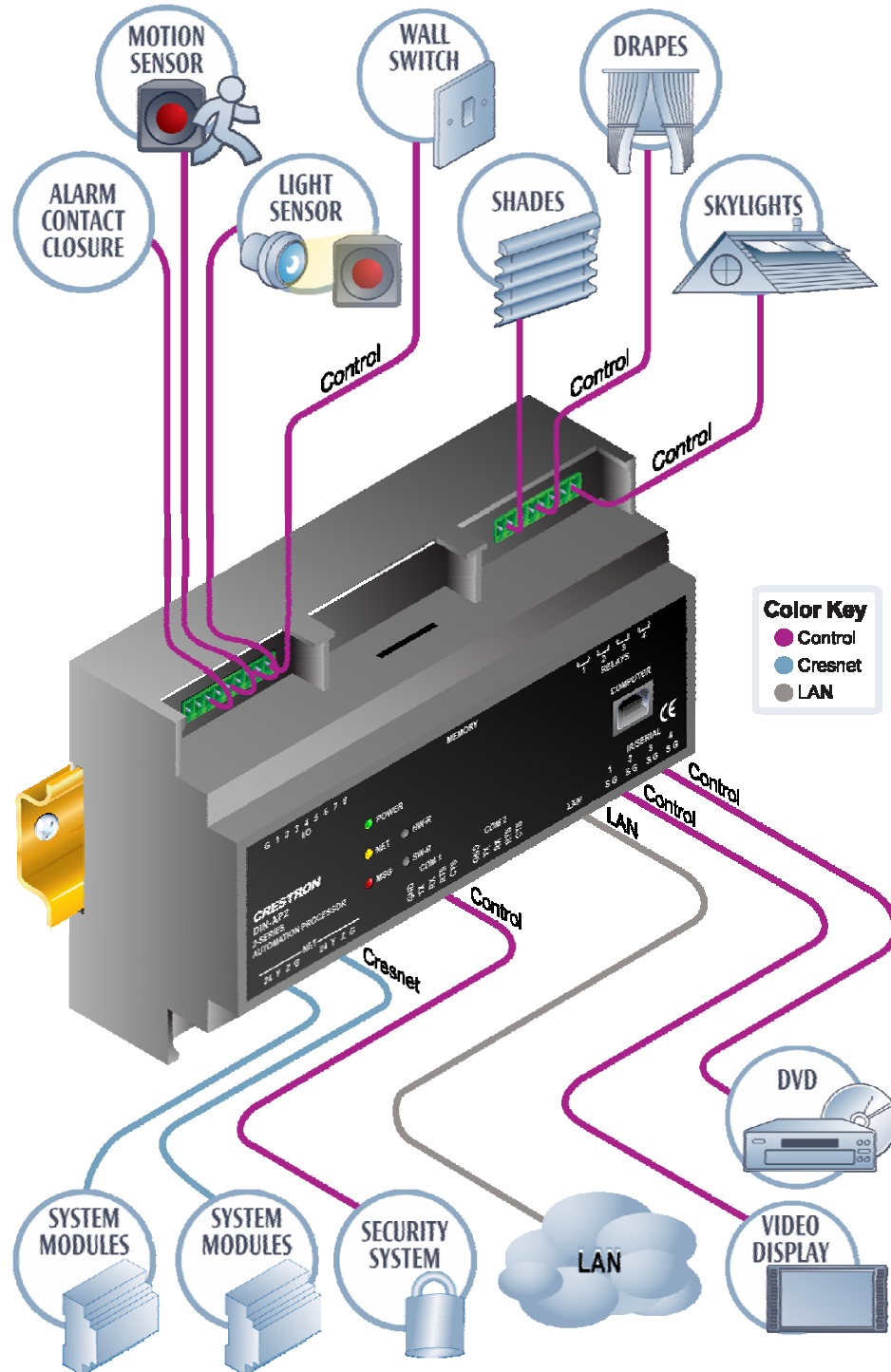
D3 Pro[™] & Crestron SystemBuilder[™] Software

Crestron D3 Pro and SystemBuilder software eliminates the need for custom programming, providing a complete design, development, and documentation solution for the lighting professional.

Applications

The following diagram shows a DIN-AP2 in a typical application.

DIN-AP2 in a Typical Application



Specifications

Specifications for the DIN-AP2 are listed in the following table.

DIN-AP2 Specifications

SPECIFICATION	DETAILS
CPU	32-bit Freescale ColdFire [®] Microprocessor
Memory	
SDRAM	32 MB
NVRAM	256 KB
Flash	8 MB
Removable Storage	Up to 2 GB using MMC (Multimedia Memory Cards) compatible card (not included)
Operating System	Real-time, preemptive multi-threaded/multitasking kernel; FAT32 file system with long names; supports SIMPL [™] Windows [®] and SIMPL+ [®]
Ethernet	10/100BaseT, auto-negotiating, full/half duplex, static IP or DHCP/DNS, SSL, TCP/IP, UDP/IP, CIP, SMTP, SNMP, built-in Web server and e-mail client; supports Crestron e-Control [®] 2 XPanel and RoomView [®] applications
Power Requirements	
Cresnet Power Usage	8.0 Watts (0.33 Amps @ 24 Volts DC) (Power supply sold separately)
Environmental	
Temperature	0° to 40°C (32° to 104°F)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	26 BTU/Hr

(Continued on following page)

DIN-AP2 Specifications (Continued)

SPECIFICATION	DETAILS
Enclosure	Light gray polycarbonate housing with polycarbonate label overlay, UL94 V-0 rated, 35 mm DIN EN 60715 rail mount, DIN 43880 form factor for enclosures with 45 mm front panel cutout, occupies 9 DIN module spaces (162 mm).
Dimensions	
Height	94.2 mm (3.71 in)
Width	159 mm (6.26 in)
Depth	58 mm (2.28 in)
Weight	303 g (11 oz)
Available Accessories	
DIN-BLOCK	DIN Rail Cresnet Distribution Block
DIN-HUB	DIN Rail Cresnet Distribution Hub
DIN-PWS50	DIN Rail Power Supply
DIN Rail Series	DIN Rail Lighting & Automation Control Modules
IRP2	IR Emitter Probe

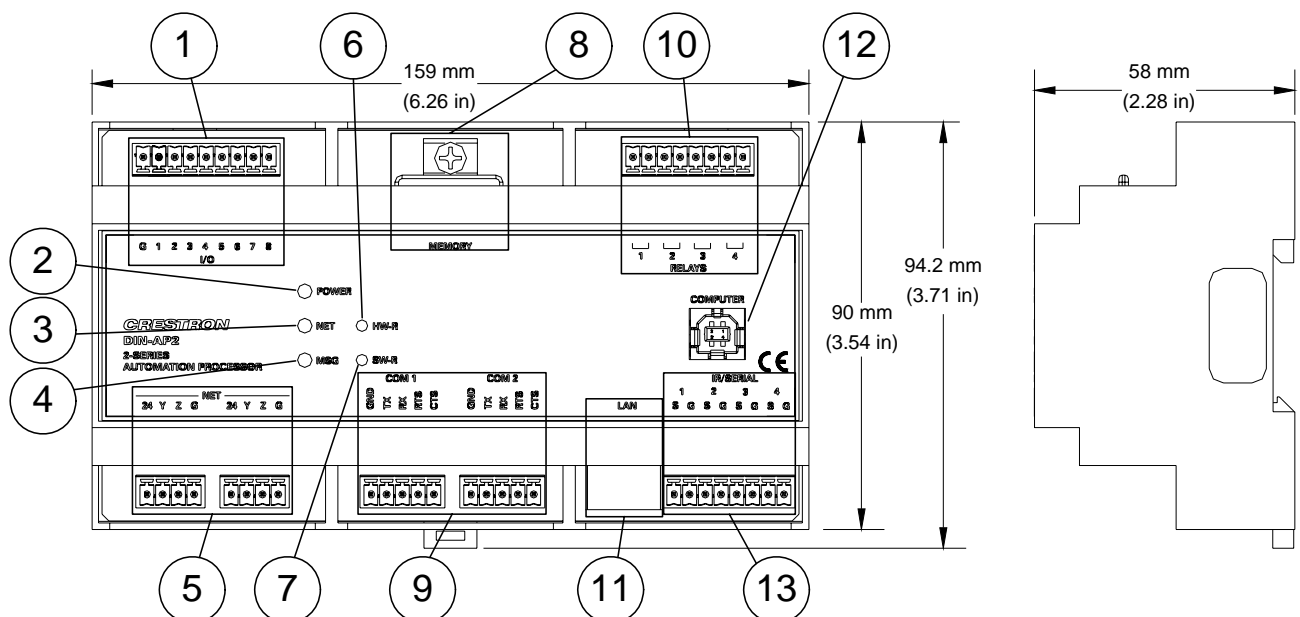
Physical Description

This section provides information on the connections, controls and indicators available on your DIN-AP2.

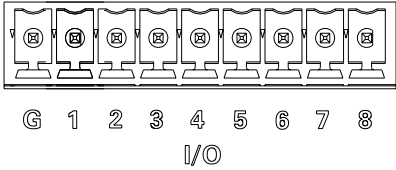
DIN-AP2 Physical View



DIN-AP2 Overall Dimensions

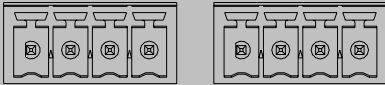


Connectors, Controls & Indicators

#	CONNECTORS¹, CONTROLS & INDICATORS	DESCRIPTION
1	<p>I/O VERSIPOINTS 1-8</p>  <p style="text-align: center;">I/O</p>	<p>(1) 9-pin 3.5mm detachable terminal block comprising (8) digital input/output or analog input ports (referenced to GND)</p> <p>Max Wire Size: 1.5 mm² (16 AWG)</p> <p>Digital Input:</p> <ul style="list-style-type: none"> Rated for 0-24 Volts DC Input Impedance 20k ohms Logic Threshold: 1.25 Volts DC <p>Analog Input:</p> <ul style="list-style-type: none"> Rated for 0-10 Volts DC, protected to 24 Volts DC maximum Input Impedance 20k ohms <p>Digital Output:</p> <ul style="list-style-type: none"> 250 mA sink from maximum 24 Volts DC, catch diodes for use with “real world” loads Programmable 5 Volts, 2k ohms pull-up resistor per input
2	PWR LED	(1) Green LED, indicates power supplied to unit via NET port
3	NET LED	(1) Yellow LED, indicates Cresnet bus activity

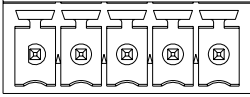
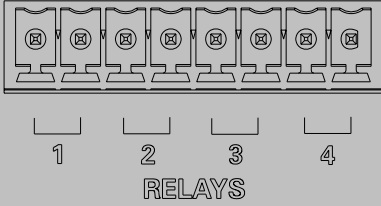
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Connectors, Controls & Indicators (Continued)

#	CONNECTORS¹, CONTROLS & INDICATORS	DESCRIPTION
4	MSG LED	(1) Red LED, illuminates when a message is present in the message log. To view the contents of the message log, use Crestron Toolbox™.
5	<p style="text-align: center;">NET²</p> <p style="text-align: center;">NET</p> <p style="text-align: center;">24 Y Z G 24 Y Z G</p> 	<p>(2) 4-pin 3.5 mm detachable terminal blocks, paralleled Cresnet port and 24 Volt DC power input.</p> <p>Max Wire Size: 1.5 mm² (16 AWG)</p> <p>Master/Slave selectable</p> <p>24: Power (24 VDC)</p> <p>Y: Data</p> <p>Z: Data</p> <p>G: Ground</p>
6	HW-R	(1) Recessed button reboots the control system.
7	SW-R	(1) Recessed button restarts the control system program.
8	MEMORY	(1) MMC compatible card slot Accepts Multimedia Memory Cards (MMC) up to 2 GB

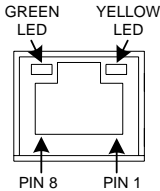
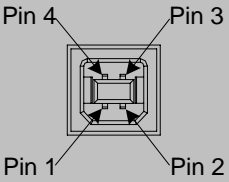
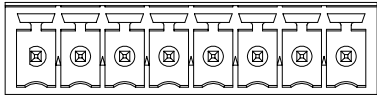
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Connectors, Controls & Indicators (Continued)

#	CONNECTORS¹, CONTROLS & INDICATORS	DESCRIPTION
9	<p>COM1 & COM 2 COM 1</p> <p>GND TX RX RTS CTS</p> 	<p>(2) 5-pin 3.5 mm detachable terminal blocks, bidirectional comprising (2) RS-232 ports Max Wire Size: 1.5 mm² (16 AWG) Up to 115.2k baud Hardware and software handshaking support</p> <p>GND: Ground TX: Transmit data RX: Receive data RTS: Request to send CTS: Clear to send</p>
10	<p>RELAYS</p> 	<p>(1) 8-pin 3.5 mm detachable terminal block comprising (4) normally open, isolated relays Max Wire Size: 1.5 mm² (16 AWG) Rated 1 Amp, 30 Volts AC/DC MOV arc suppression across contacts</p>

(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	CONNECTORS¹, CONTROLS & INDICATORS	DESCRIPTION																				
11	<p style="text-align: center;">LAN</p> 	<p>(1) 8-wire RJ-45 with 2 LED indicators 10/100BaseT Ethernet port Green LED indicates link status Yellow LED indicates Ethernet activity</p> <table border="1" data-bbox="922 718 1442 928"> <thead> <tr> <th>PIN</th> <th>SIGNAL</th> <th>PIN</th> <th>SIGNAL</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>TX +</td> <td>5</td> <td>N/C</td> </tr> <tr> <td>2</td> <td>TX -</td> <td>6</td> <td>RC -</td> </tr> <tr> <td>3</td> <td>RC+</td> <td>7</td> <td>N/C</td> </tr> <tr> <td>4</td> <td>N/C</td> <td>8</td> <td>N/C</td> </tr> </tbody> </table>	PIN	SIGNAL	PIN	SIGNAL	1	TX +	5	N/C	2	TX -	6	RC -	3	RC+	7	N/C	4	N/C	8	N/C
PIN	SIGNAL	PIN	SIGNAL																			
1	TX +	5	N/C																			
2	TX -	6	RC -																			
3	RC+	7	N/C																			
4	N/C	8	N/C																			
12	<p style="text-align: center;">COMPUTER</p> 	<p>(1) USB Type B female USB 1.1 computer console port (2-meter cable included).</p> <table border="1" data-bbox="922 1104 1442 1234"> <thead> <tr> <th>PIN</th> <th>SIGNAL</th> <th>PIN</th> <th>SIGNAL</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>+5 VDC</td> <td>3</td> <td>Data +</td> </tr> <tr> <td>2</td> <td>Data -</td> <td>4</td> <td>Ground</td> </tr> </tbody> </table>	PIN	SIGNAL	PIN	SIGNAL	1	+5 VDC	3	Data +	2	Data -	4	Ground								
PIN	SIGNAL	PIN	SIGNAL																			
1	+5 VDC	3	Data +																			
2	Data -	4	Ground																			
13	<p style="text-align: center;">IR/SERIAL</p> <p style="text-align: center;">IR/SERIAL</p> <p style="text-align: center;">1 2 3 4</p> <p style="text-align: center;">S G S G S G S G</p> 	<p>(1) 8-pin 3.5 mm detachable terminal block; comprising (4) IR/Serial output ports. Max Wire Size: 1.5 mm² (16 AWG) IR output up to 1.2 MHz 1-way serial TTL/RS-232 (0-5 Volts) up to 115.2k baud Individual signal generator per port, allowing simultaneous firing of all ports</p>																				

1. Interface connectors for **NET**, **IR/SERIAL**, **COM 1**, **COM 2**, **I/O** and **RELAYS** ports are provided with the unit.
2. The DIN-AP2 can only be powered via the **NET** port. Be sure to use a Crestron approved power supply as another may cause damage.

Industry Compliance

This unit has been manufactured to comply with UL's Standards for Safety in Canada and the United States. Formal approval is pending.

As of the date of manufacture, the DIN-AP2 has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.



NOTE: This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.
-

Setup

Network Wiring

When wiring the Cresnet and Ethernet network, consider the following:

- Use Crestron Certified Wire.

NOTE: Cresnet-HP wire cannot be used.

- Use Crestron power supplies for Crestron equipment.
- Provide sufficient power to the system.

CAUTION: Insufficient power can lead to unpredictable results or damage to the equipment. Please use the Crestron Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

Cresnet

For networks with 20 or more devices, use a Cresnet Hub/Repeater (DIN-HUB) to maintain signal quality.

For more details, refer to “Check Network Wiring” on page 29.

Ethernet

The DIN-AP2 can also use high-speed Ethernet for communications with other IP-based devices.

For information on connecting Ethernet devices in a Crestron system, refer to the latest version of the Crestron e-Control[®] Reference Guide (Doc. 6052), which is available for download from the Crestron website (www.crestron.com/manuals).

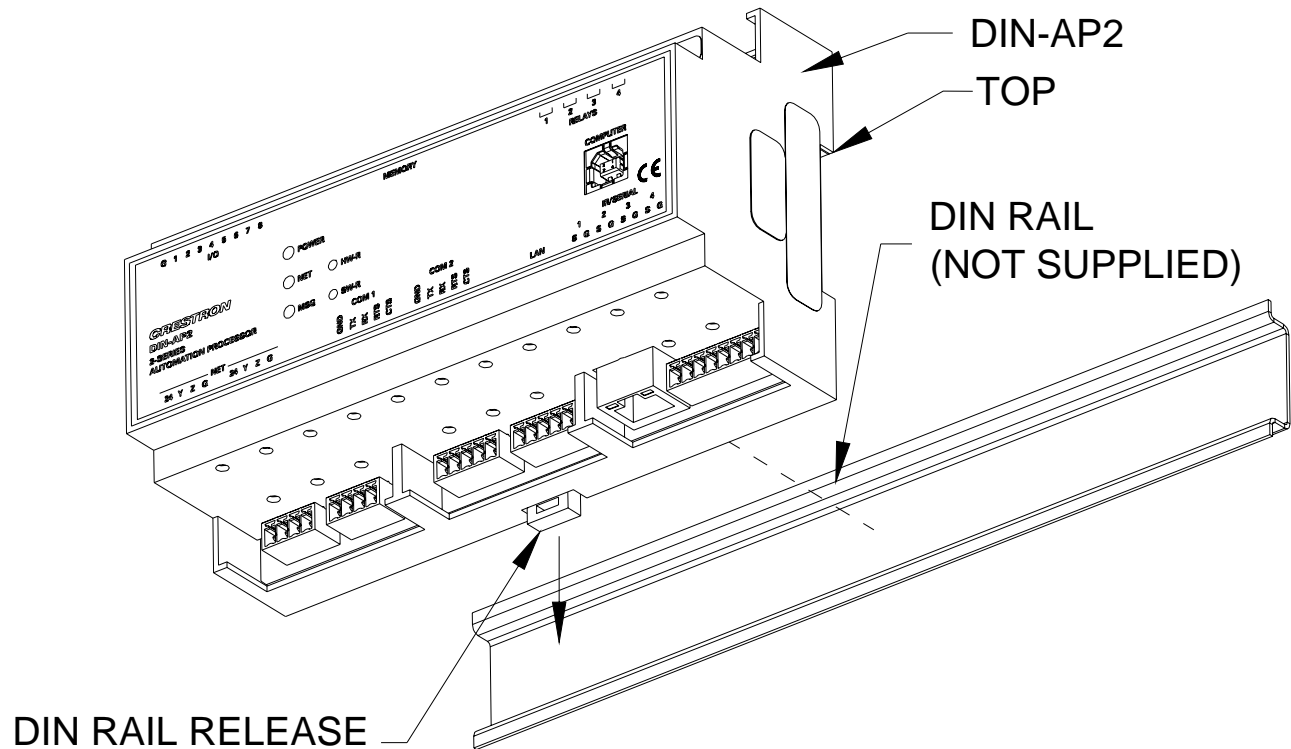
Installation

The DIN-AP2 must be installed by a licensed electrician, in accordance with all national and local codes.

CAUTION: This equipment is for indoor use only. Mount in a well ventilated area. The ambient temperature must be 0° to 40° C (32° to 104° F). The relative humidity must be 10% – 90% (non-condensing).

The DIN-AP2 is designed for installation on a DIN rail. Refer to the following diagram when installing.

Installing the DIN-AP2



1. Place the top of the DIN-AP2's rail mount over the top of the DIN rail.
2. Tilt the bottom of the DIN-AP2 toward the DIN rail until it snaps into place.

NOTE: When mounting DIN rail products, it may be necessary to use a flat-head screw driver to pull the DIN rail release tab while snapping the device onto the DIN rail.

To remove the DIN-AP2 from the DIN rail, use a small, flat object (i.e. a flat-head screwdriver) to pull the DIN rail release and tilt the bottom of the DIN-AP2 away from the DIN rail.

NOTE: Certain third party DIN cabinets provide space for an informational label between each DIN rail row. Crestron's Engraver software (version 4.0 or later) can generate appropriate labels for all Crestron DIN rail products.

Hardware Hookup

Connect the Device

Make the necessary connections as called out in the illustration that follows this paragraph. Refer to “Network Wiring” on page 13 before attaching the 4-position terminal block connector. Apply power after all connections have been made.

WARNING: Prior to connecting the device, turn off power at the circuit breaker. Failure to do so may result in serious personal injury or damage to the device. Restore power after all connections have been made.

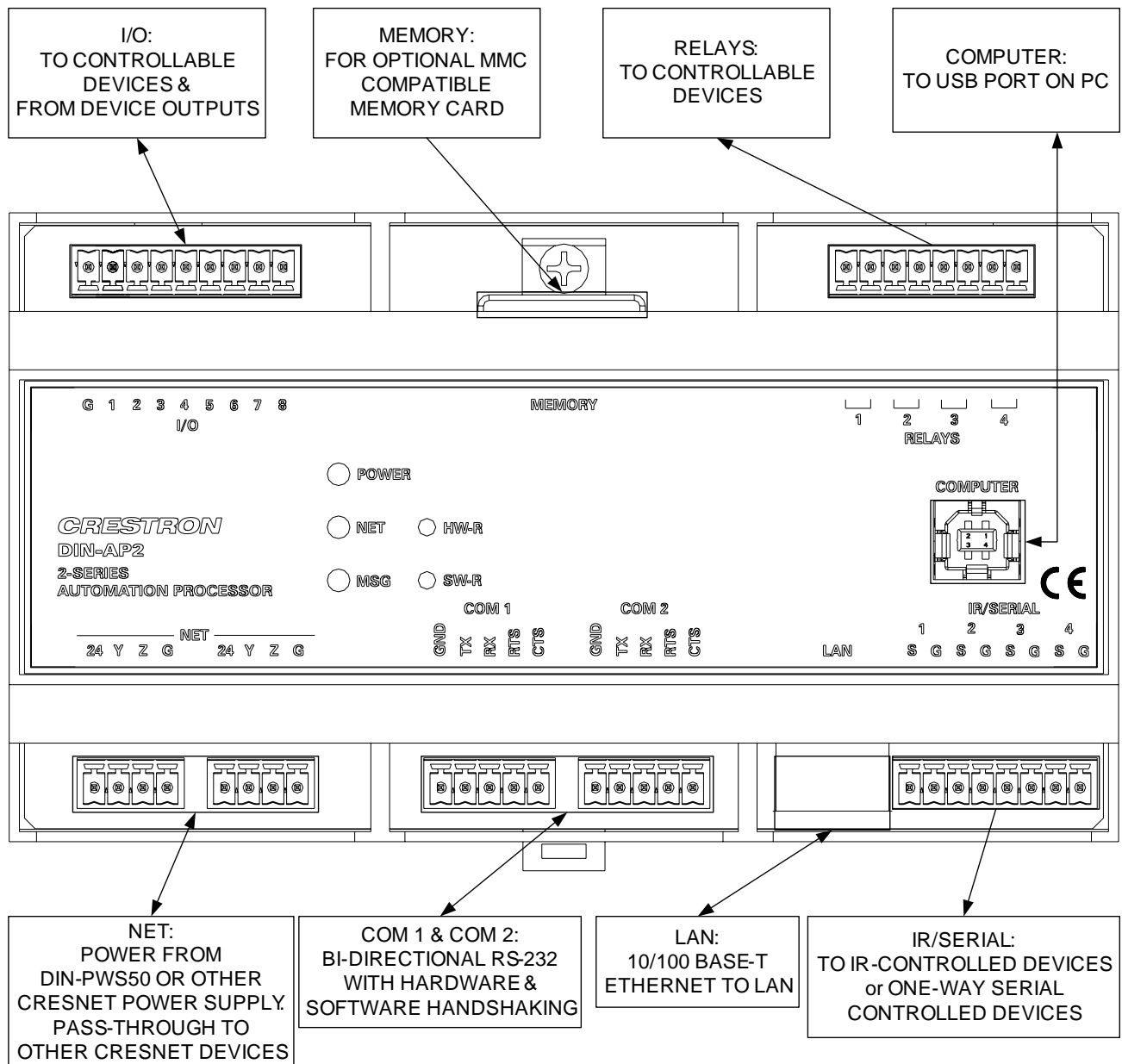
CAUTION: Connecting this device to the wrong type of load, or short-circuiting the load can cause severe product damage. Each load should be tested to identify a short circuit condition prior to wiring the load to the module.

NOTE: Install in accordance with all local and national electric codes.

NOTE: Use copper wire only.

When making connections to the DIN-AP2, use a Crestron power supply.

Hardware Connections for the DIN-AP2



NOTE: Ensure the unit is properly grounded.

Power can be supplied from a DIN-PWS50 DIN Rail Power Supply or other Cresnet power supply. For more information, refer to the latest version of the DIN-PWS50 Operations & Installation Guide (Doc. 6667), which is available for download from the Crestron website.

NOTE: The DIN-AP2 can only be powered by the 4-position terminal block connector labeled **NET**.

Versiport Connections

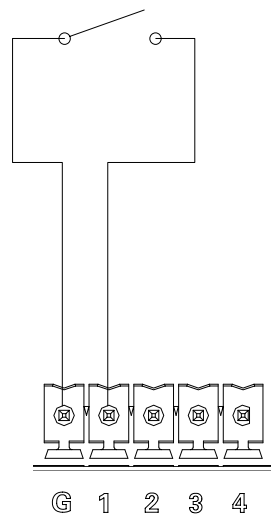
Depending on the application, the DIN-AP2's Versiports can be wired multiple ways. Refer to the following diagrams when wiring a Versiport.

WARNING: Incorrect wiring may damage the DIN-AP2 or the connected device.

NOTE: The settings for input/output and the pull-up resistor are specified in the control system program. For more information, refer to the SIMPL Windows help file.

Versiport Wiring Diagrams—Digital Input Function

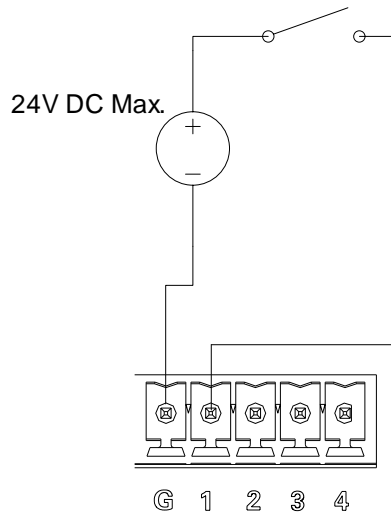
Detecting a contact closure from a switch or relay



I/O Setup:
Digital Input

Pull-up Resistor:
Enabled

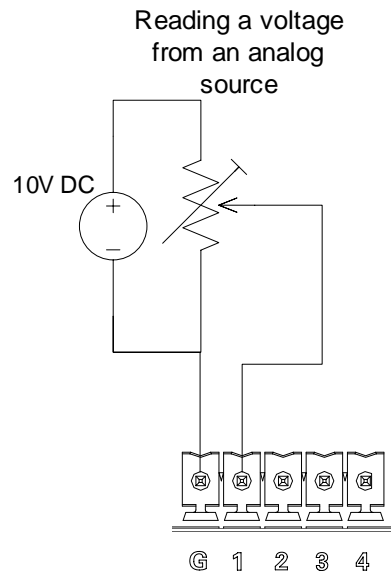
Detecting a voltage from a switch or relay



I/O Setup:
Digital Input

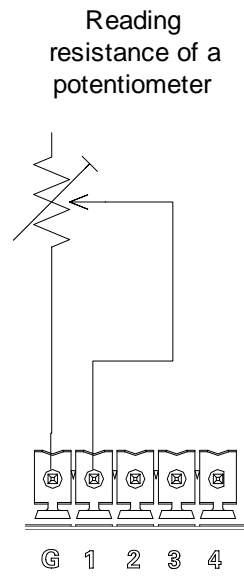
Pull-up Resistor:
Disabled

Versiport Wiring Diagrams—Analog Input Function



I/O Setup:
Analog Input

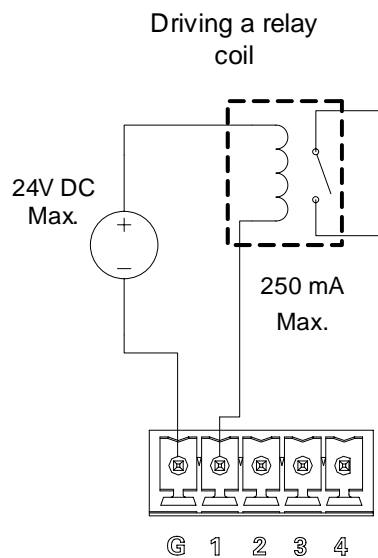
Pull-up Resistor:
Disabled



I/O Setup:
Analog Input

Pull-up Resistor:
Enabled

Versiport Wiring Diagrams—Digital Output Function



I/O Setup:
Digital Output

Pull-up Resistor:
Disabled

Programming Software

Have a question or comment about Crestron software?

Answers to frequently asked questions (FAQs) can be viewed in the Online Help section of the Crestron website. To post a question or view questions you have submitted to Crestron's True Blue Support, log in at <http://support.crestron.com>. First-time users will need to establish a user account.

Earliest Version Software Requirements for the PC

NOTE: Crestron recommends that you use the latest software to take advantage of the most recently released features. The latest software is available from the Crestron website.

NOTE: Crestron software and any files on the website are for authorized Crestron dealers and Crestron Authorized Independent Programmers (CAIP) only. New users may be required to register to obtain access to certain areas of the site (including the FTP site).

Crestron has developed an assortment of Windows[®]-based software tools to develop a controlled Cresnet system. You can create a program to control the DIN-AP2 using the Crestron programming tools such as Crestron SystemBuilder, D3 Pro[™], or SIMPL Windows. Customers whose focus is on lighting systems may prefer to use the D3 Pro software since it is designed especially for creating lighting and environmental system control applications. Customers already familiar with SIMPL Windows who are including a lighting system as part of an overall control system project may prefer to continue using SIMPL Windows. For the minimum recommended software versions, visit the Version Tracker page of the Crestron website (www.crestron.com/versiontracker).

Programming with Crestron SystemBuilder

Crestron SystemBuilder is the easiest method of programming but does not offer as much flexibility as SIMPL Windows. For additional details, download SystemBuilder from the Crestron website and examine the extensive help file.

Programming with D3 Pro

Crestron's D3 Pro lighting software provides all the tools necessary to create a complete Crestron lighting system for residential applications. The lighting system includes the control system logic program, touchpanel projects and keypad programming, documentation and real-time lighting adjustment capabilities.

As with all Crestron software, D3 Pro provides extensive right-click and drag-and-drop functionality in addition to convenient keyboard shortcuts for frequently used functions and commands.

Programming is organized into six system **Views** of the lighting system, each providing a moveable toolbox of devices such as interfaces, fixtures and control modules. You can add a device to your system simply by selecting it from one of the toolboxes and dragging it to a room. The available toolboxes differ depending on the View but all Views include a "General" toolbox that allows you to add areas and rooms at any time.

Programming with SIMPL Windows

NOTE: While SIMPL Windows can be used to program the DIN-AP2, it is recommended to use Crestron SystemBuilder or D3 Pro for configuring a system.

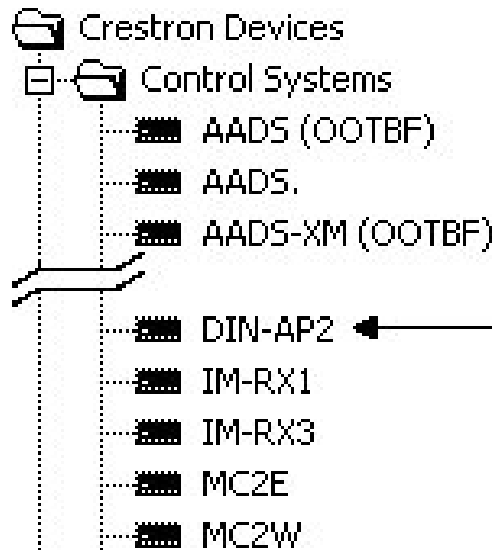
SIMPL Windows is Crestron's premier software for programming Crestron control systems. It is organized into two separate but equally important "Managers".

Configuration Manager

Configuration Manager is the view where programmers "build" a Crestron control system by selecting hardware from the *Device Library*.

- To incorporate the DIN-AP2 into the system, drag the DIN-AP2 from the Control Systems folder of the *Device Library* and drop it in the *System Views*.

Locating the DIN-AP2 in the Device Library



Program Manager

Program Manager is the view where programmers “program” a Crestron control system by assigning signals to symbols.

The symbol can be viewed by double clicking on the icon or dragging it into *Detail View*. Each signal in the symbol is described in the SIMPL Windows help file (**F1**).

Uploading and Upgrading

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, programs or firmware) can be transferred to the control system (and/or device). Finally, program checks can be performed (such as changing the device ID or creating an IP table) to ensure proper functioning.

While the next section provides an overview for communication, refer to “Establishing Communications with the Control System” in the Crestron 2-Series Control Systems Reference Guide (Doc. 6256) for connection details. If communications cannot be established, refer to “Troubleshooting Communications” in the same guide.

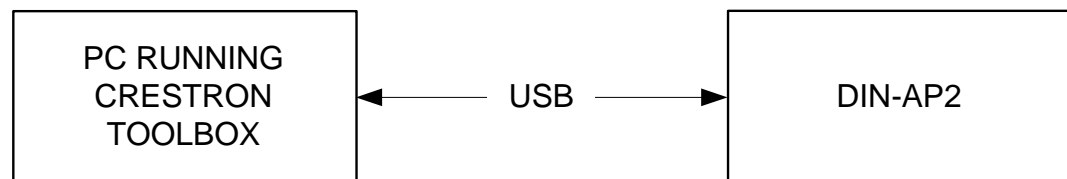
Establishing Communication

Use Crestron Toolbox for communicating with the DIN-AP2; refer to the Crestron Toolbox help file for details. There are two methods of communication.

USB


NOTE: Required for initial setup of Ethernet parameters.

USB Communication



- The **COMPUTER** port on the DIN-AP2 connects to the USB port on the PC via the included Type-A to Type B USB cable.
- Use the Address Book in Crestron Toolbox to create an entry using the expected communication protocol (USB). When multiple USB devices are connected, identify the DIN-AP2 by entering “DIN-AP2” in the *Model* textbox, the unit’s serial number in the *Serial* textbox or the unit’s hostname in the *Hostname* textbox. The hostname can be found in the “System Info” window in the section


marked *Ethernet* however, communications must be established in order to see this information in the “System Info” window.

- Display the DIN-AP2’s “System Info” window (click the  icon); communications are confirmed when the device information is displayed.

TCP/IP

Ethernet Communication



- Establish USB communication between DIN-AP2 and PC.
- Enter the IP address, IP mask, and default router of the DIN-AP2 via the Crestron Toolbox (**Functions | Ethernet Addressing**); otherwise enable DHCP.
- Confirm Ethernet connections between DIN-AP2 and PC. If connecting through a hub or router, use CAT5 straight through cables with 8-pin RJ-45 connectors. Alternatively, use a CAT5 crossover cable to connect the two **LAN** ports directly without using a hub or router.
- Use the Address Book in Crestron Toolbox to create an entry for the DIN-AP2 with the DIN-AP2’s TCP/IP communication parameters.
- Display the “System Info” window (click the  icon) and select the DIN-AP2 entry.
- Use Crestron Toolbox to create the DIN-AP2 IP table.
 - ⇒ Select **Functions | IP Table Setup**.
 - ⇒ Either add, modify, or delete entries in the IP table. The DIN-AP2 can have only one IP table entry.
 - ⇒ A defined IP table can be saved to a file or sent to the device.
- When using the DIN-AP2 as a “slave”, edit the “master” control system’s IP table to include an entry for the DIN-AP2. The entry should list the DIN-AP2’s IP ID (specified on the DIN-AP2’s IP table) and the internal gateway IP address 127.0.0.1.

Programs and Firmware

Program or firmware files may be distributed from programmers to installers or from Crestron to dealers. Firmware upgrades are available from the Crestron website as new features are developed after product releases. One has the option to upload programs via the programming software or to upload and upgrade via the Crestron Toolbox. For details on uploading and upgrading, refer to the SIMPL Windows help file or the Crestron Toolbox help file.

SIMPL Windows

If a SIMPL Windows program is provided, it can be uploaded to the control system using SIMPL Windows or Crestron Toolbox.


Firmware

Check the Crestron website to find the latest firmware. (New users may be required to register to obtain access to certain areas of the site, including the FTP site.)

Upgrade DIN-AP2 firmware via Crestron Toolbox.

- Establish communication with the DIN-AP2 and display the “System Info” window.
- Select **Functions | Firmware...** to upgrade the DIN-AP2 firmware.

Program Checks

Display the “System Info window (click the  icon) and select the **Functions** menu to display actions that can be performed on the DIN-AP2.

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

DIN-AP2 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Unexpected response from control system.	Network devices are not communicating with the control system.	Use Crestron Toolbox to poll the network. Verify network connection to the device.
PWR LED does not illuminate.	Control system is not receiving power.	Ensure that the Cresnet cable that supplies power is securely plugged into the NET connector.
		Verify that the power supply is able to provide sufficient power to the DIN-AP2 and all other connected Cresnet devices.

(Continued on following page)

DIN-AP2 Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
MSG LED illuminates.	Hardware or software failure, hardware incompatibility with software definitions or programming error.	Verify that hardware configuration matches software configuration. Use Crestron Toolbox to display the error log. Refer to "Error Message Definitions" in the latest version of the Crestron 2-Series Control Systems Reference Guide (Doc. 6256) for more details.
System locks up.	Various.	Press and release the HW-R button, then press and hold SW-R button to bypass program and communicate directly with the processor. (Refer to "Troubleshooting Communications" in the latest version of the Crestron 2-Series Control Systems Reference Guide (Doc. 6256) for more details.

(Continued on following page)

DIN-AP2 Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Cresnet device does not respond.	Device not wired correctly.	Verify Cresnet wiring.
	Improper NET ID used.	Verify that device ID matches NET ID in the program.
	Device is not receiving sufficient power.	Use the Crestron Power Calculator to help calculate how much power is needed for the system.

System Monitor

The System Monitor allows you to reload firmware into the DIN-AP2 in the event that you cannot load the firmware in the normal mode.


If the system does not function, perform the following procedure:

1. Disconnect all Crestron USB devices from the PC.
2. On the DIN-AP2, press and release the **HW-R** button. The **MSG** LED will start blinking rapidly four times per second.
3. During the rapid blink of the **MSG** LED, press and release the **SW-R** button. This will put the DIN-AP2 into *Wait* mode for the next five seconds. During this mode the **MSG** LED will blink slowly, once per second.
4. During *Wait* mode, press and release the **SW-R** button again. The DIN-AP2 will now enter the *Wait Acknowledge* mode for the next five seconds. During this mode the **MSG** LED will blink rapidly four times per second.
5. During *Wait Acknowledge* mode, press and release the **SW-R** button a third time. The DIN-AP2 will enter *Monitor* mode. Once the DIN-AP2 is in *Monitor* mode, the **MSG** LED will flash to indicate *Monitor* mode. The display will also indicate the *Monitor* mode.

6. Once the DIN-AP2 is in *Monitor* mode, connect to the PC using a USB cable.

NOTE: If at any point in the above sequence, one of the timer periods expires without the **SW-R** button being pressed, the unit will boot normally, first running the firmware, then loading the application.

NOTE: If your PC does not have the USB driver installed, after connecting the DIN-AP2 to the PC using the USB cable, you will see a dialog box on your PC screen asking you to install the USB driver. For instructions on how to install the USB driver, refer to the Crestron Toolbox help file.


7. Open Toolbox and start the Text Console (click the  icon). Then, click on the Address Book icon in the lower left corner of the window to open the “Address Book” window.
8. In the “Address Book” window, click the **Add Entry** button and give the new entry a name (e.g. “System Monitor”).
9. Click the arrow next to the *Device Type* drop down list. A “Warning” window will open to inform you that this is an advanced feature. Click **OK**, then select “2-Series Control System Monitor” from the drop down list. Make sure to choose **USB** as the *Connection Type*, then click **OK**. The following text will appear in the bottom right corner of the “Text Console” window:
`usb;device 2SeriesCtrlSystemMonitor`

The following text will appear in Toolbox:

```
MONITOR>
```

10. At the Toolbox prompt, type **erase** and press **Enter**. The following text will appear in Toolbox:

```
Erasing  
->25%->50%->75%->100%  
Done
```

11. Click the  icon and select **Firmware...** to open the “Firmware” window, then click **Browse**.

12. Find and select the correct firmware file (.CUZ or .zip) and click **Open**.
13. In the “Firmware” window, click **Send**. You will see a “Confirmation” window asking if you’ve selected the right file. Click **OK** and you will see the “File Transfer” window.
14. When file transfer is completed, you will see a window asking you to re-connect. Click **OK**, then close the “Firmware” window and re-connect using the normal Address Book entry.

Network Analysis

If Cresnet analysis is required, contact Crestron’s True Blue Support.

Battery Replacement

A Lithium battery is used to power the system clock within the DIN-AP2. Under normal conditions, it will last for approximately 10 years. In the event that the clock fails, only an authorized technician should replace it. Refer to caution statement below.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Check Network Wiring

Use the Right Wire

In order to ensure optimum performance over the full range of your installation topology, Crestron Certified Wire and only Crestron Certified Wire may be used. Failure to do so may incur additional charges if support is required to identify performance deficiencies because of using improper wire.

Calculate Power

CAUTION: Use only Crestron power supplies for Crestron equipment. Failure to do so could cause equipment damage or void the Crestron warranty.

CAUTION: Provide sufficient power to the system. Insufficient power can lead to unpredictable results or damage to the equipment. Please use the Crestron Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

When calculating the length of wire for a particular Cresnet run, the wire gauge and the Cresnet power usage of each network unit to be connected must be taken into consideration. Use Crestron Certified Wire only. If Cresnet units are to be daisy-chained on the run, the Cresnet power usage of each network unit to be daisy-chained must be added together to determine the Cresnet power usage of the entire chain. If the unit is home-run from a Crestron system power supply network port, the Cresnet power usage of that unit is the Cresnet power usage of the entire run. The wire gauge and the Cresnet power usage of the run should be used in the following equation to calculate the cable length value on the equation's left side.

Cable Length Equation

$$L < \frac{40,000}{R \times P}$$

Where:

- L = Length of run (or chain) in feet
- R = 6 Ohms (Crestron Certified Wire : 0.75 MM² (18 AWG))
- P = Cresnet power usage of entire run (or chain)

Make sure the cable length value is less than the value calculated on the right side of the equation. For example, a Cresnet run using 0.75mm² (18 AWG) Crestron Certified Wire and drawing 20 watts should not have a length of run more than 101 meters (333 feet). Cresnet-HP cannot be used.

NOTE: All Crestron certified Cresnet wiring must consist of two twisted pairs. One twisted pair is the +24V conductor and the GND conductor and the other twisted pair is the Y conductor and the Z conductor.

Strip and Tin Wire

When daisy-chaining Cresnet units, strip the ends of the wires carefully to avoid nicking the conductors. Twist together the ends of the wires that share a pin on the network connector and tin the twisted connection. Apply solder only to the ends of the twisted wires. Avoid tinning too far up the wires or the end becomes brittle. Insert the tinned connection into the Cresnet connector and tighten the retaining screw. Repeat the procedure for the other three conductors.

Add Hubs

Use of a Cresnet Hub/Repeater (DIN-HUB) is advised whenever the number of Cresnet devices on a network exceeds 20 or when the combined total length of Cresnet cable exceeds 914 meters (3000 feet).

Reference Documents

The latest version of all documents mentioned within the guide can be obtained from the Crestron website (www.crestron.com/manuals). This link will provide a list of product manuals arranged in alphabetical order by model number.

List of Related Reference Documents

DOCUMENT TITLE
2-Series Control Systems Reference Guide
DIN-PWS50 DIN Rail Power Supply
e-Control Reference Guide

Further Inquiries

If you cannot locate specific information or have questions after reviewing this guide, please take advantage of Crestron's award winning customer service team by calling Crestron at 1-888-CRESTRON [1-888-273-7876].

You can also log onto the online help section of the Crestron website (www.crestron.com/onlinehelp) to ask questions about Crestron products. First-time users will need to establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features and extends the capabilities of the DIN-AP2, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website periodically for manual update availability and its relevance. Updates are identified as an “Addendum” in the Download column.

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**Operations & Installation Guide – DOC. 6662A
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